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Interactive Whiteboard as a Means of Teaching Biology Lessons

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Abstract: The dossier discusses tasks and opportunities on interactive whiteboardsи for developing students ' abstract thinking. Interactive whiteboards make it possible to see objects that are difficult and sometimes impossible, to fully represent according to the description, explanation, or story.

Keywords: teacher, interactive whiteboard, function, nature, activation, learning, atmosphere, lesson.

One of the pedagogical means of teaching in the modern educational process is an interactive whiteboard, which serves as an integral part and plays a certain role in activating the training and upbringing of students. The educational function of the interactive whiteboard, first of all, is manifested in the activation of cognitive activity. The interactive whiteboard performs various functions that contribute to the emergence and strengthening of interest in the subject of biology, to a deep study of the phenomena of the surrounding life. Introducing students to the study of processes and phenomena using an interactive whiteboard helps to revive the material being studied [1]. This technical tool allows students to feel and better understand the regularities of the processes of science and life, the relationship of phenomena, ideas for the development of laws studied in biology lessons, using concrete examples. So,for example, getting acquainted with the regularities of the work of a particular organ system, students establish the relationship between the structure of organs related to this system and the function that they perform, using an interactive task. At the same time, the process of intellectual enrichment of students is intensively underway. This is due to the feature of working on an interactive whiteboard, which makes it easier and faster to restore previous knowledge, activate long-forgotten ones in your memory. The introduction of interactive tasks is an important feature of activating интересовstudents ' interests in biology classes and extracurricular activities. The objects used in the lessons are comprehended on the basis of existing knowledge, then the knowledge is rebuilt and this raises them to a higher level. [2]. Intensive work with an interactive whiteboard has an impact on the cognitive activity of students. Creative imagination, active inclusion of tasks in the course of the lesson, accompanies the process of studying processes and phenomena. This complex allows you to take a fresh look at the surrounding reality, and this is an incentive for activating cognitive activity. The attitude of students changes not only to the material that appears before them, but also to the process of acquiring knowledge using a new learning tool-an interactive whiteboard [3]. Biology classes involve direct work with visual objects, models, diagrams, and natural phenomena that activate cognitive activity. It should be noted and another very important for activation of the child's cognitive activity. When working directly with an interactive whiteboard, students better grasp the essence of processes and phenomena occurring in nature. A special opportunity for students to activate cognitive activity in biology lessons is provided by various interactive tasks, in which, in addition to performing tasks, students become initiators of many interesting ideas. In such work, which requires

active cognitive activity, interests become more persistent and deep. [4]. In the process of working with an interactive whiteboard, a complex system of relationships with wildlife develops. Under the influence of new knowledge, beliefs are rebuilt, as well as views on what surrounds a person. Direct participation, attentive attitude to natural phenomena and objects, is increasingly coming to the fore in the learning process, which is an indicator of the development of their cognitive activity [5]. It is necessary to observe how working with an interactive whiteboard affects students with stable interest, as well as those with unstable interest, and how their attitude to biology lessons changes. So, for example, using various tasks on the interactive whiteboard, not only students with good results are included in the work, but even those who are not interested in the subject, they go to the blackboard and complete tasks, thereby actively participating in the learning process. The atmosphere of common interest helps to activate the interests of everyone; even the most inert ones do not remain indifferent when working with interactive tasks. At the same time, there are situations when students actively operate with the studied material. This is an indicator of the activation of cognitive interest in what is studied in biology lessons [6]. In the process of learning using an interactive whiteboard, a system is formed that promotes a positive attitude to the study of biological objects and phenomena, collective relations associated with solving a common problem. All this contributes to a higher level of development and activation of cognitive activity. Moreover, the activation of cognitive interests, being included in the system of key motives, has a beneficial effect on the formation of personality as a whole. Psychological and pedagogical studies show that the activation of cognitive activity in biology lessons with the introduction of an interactive whiteboard occurs differently for each teacher. In the process of learning, some people's interests expand, others are supported, and others develop a positive attitude to learning. The emerging cognitive interest in tasks on the interactive whiteboard gradually changes the attitude of students to studying biology at school. [7]. According to many authors, tasks on an interactive whiteboard contribute to the development of students ' abstract thinking. Interactive tasks give you the opportunity to see objects that are difficult, and sometimes impossible, to fully represent according to the description, explanation , or story. The visibility of the interactive whiteboard significantly increases depth of perception of the object. This is fundamentally important for children and adolescents whose thinking is assessed as "objective". In biology lessons, when working with an interactive whiteboard, the activation of cognitive activity in students reaches different degrees of development. At the same time, the use of an interactive whiteboard forms and activates cognitive activity in the learning process. [9]. In all kinds of activities, a person, in one way or another, interacts with nature. In the process of communication, they form certain relationships and diverse interests: cognitive, moral, aesthetic. The experience of conducting lessons using an interactive whiteboard shows the impact of cognitive interest on the worldview of students and the close connection of students ' attitude to nature. At the lessons in the 11th grade on ecology, the topic of environmental offenses was studied. Students actively participated in this lesson, solved environmental problems and looked for ways to solve the fight against offenses; everyone was able to express themselves personally about such a difficult problem, thereby forming their own view of the situation. When studying biology using an interactive whiteboard, opportunities are created for close contact with natural objects, for aesthetic perception, and for understanding the essence and meaning of biological phenomena and processes. One of the tasks of biological education –is the education and development of an aesthetic sense and this is a very subtle and complex task. During the lessons in the 10th grade, using an interactive whiteboard, they were able to work with a virtual laboratory, as well as visit the interactive museum of paleontology, which allowed students to really see those objects that are of the greatest interest for studying the topic. For example, when studying the topic "Mitosis", students were asked to compare the stages of mitosis with

photos taken using an electron microscope. Moreover , the students took photos on their own and displayed the images on an interactive whiteboard. [8]. Students ' work with an interactive whiteboard can be very diverse. Various types of interactive tasks are performed in the course of which various objects and phenomena are observed , their properties and features are identified, and the search for subjectively new and still unknown things is carried out, which in turn activates the cognitive activity of students. Analyzing the literature on this topic, it should be noted what factors have an impact on the activation of cognitive activity. These factors include:

- connection of theory with practice;
- establishing intersubject connections in the process of studying biology;
- research element in the process of studying biology;
- The ability to develop independence and activity.

Psychological and pedagogical literature sources indicate that the activation of cognitive activity of students, as a result of working with an interactive whiteboard, allows you to diversify the content of the material, its entertainment, as well as use such teaching methods as reproductive and problem-based. What motivational methods should be used when using an interactive whiteboard in biology lessons? First of all, special attention should be paid to the importance of learning outcomes obtained in the process of working with an interactive whiteboard for the self -development of each student, the development of his abilities. Many authors pay great attention to the use of interactive whiteboards as a means of personal development. According to L. V. According to Ms. Aliyeva, a variety of activities, including cognitive ones, in which the student is involved is a means of personal development, so an interactive whiteboard is an effective means of developing students ' personal qualities. Currently, the main goal of training is the comprehensive development of students ' personality, a person who is able to independently extract information, make non-standard decisions, and solve global problems of our time. Lessons using an interactive whiteboard have a significant potential for solving these problems and make a significant contribution to the development of the emotional sphere[3]. Nowadays, human activity is a driving factor in the system of relations with nature. A new relationship is formed, where the student is not only a designer and a guide. In order for nature to be perceived as an object of beauty, it is necessary to evoke positive emotions while working with an interactive whiteboard. You can create this by using situations where students view biological objects. For example, when studying the topic ecology with the possibility of creating an ecosystem of natural zones and when studying natural territories where they have not yet been, as well as when developing tasks that need not only knowledge, but also an emotional component. The interactive whiteboard is a comprehensive means of comprehensive development of the younger generation in cognition and accessible improvement of the surrounding reality. Being a modern teaching tool, the interactive whiteboard creates a qualitatively new pedagogical complex that can have a comprehensive impact on the individual and contribute to its harmonious development. However, do not forget that when using an interactive whiteboard in biology lessons, it is important to observe the following pedagogical requirements::

- ✓ content of forms of activity (choose those forms of activity that will be applicable in a particular lesson in a particular situation);
- ✓ taking into account the age and individual characteristics of students
- ✓ Systematic, continuous development of skills in working with an interactive whiteboard (repeated use of the whiteboard increases the level of interest of students).

The current content of forms of activity is based on the fact that the interactive whiteboard should reflect everything new. The pace of development of science and technology requires students to be able to navigate the flow of information. An important point in taking into account the age and individual characteristics интересовof students ' interests is the use of game forms based on the knowledge approach. Game situations in which students find themselves help in education, and this ensures the transition of knowledge into strong beliefs. Combining pedagogical leadership with self-reliance is a requirement associated with a differentiated approach to the learning process. One of the requirements is consistency. Consistency is ensured by planning the work by continuity of the forms of content and method of its organization. Conducting lessons with an interactive whiteboard should take into account the requirement of continuous development of this work and the systematic use of this complex. Compliance with all these requirements contributes to the creation of a system of interactive lessons, which is characterized by independent activity of students in solving various problems, students possess accessible methods of scientific knowledge, and the teacher plays the role of mentor. Thus, working with an interactive whiteboard in biology lessons requires compliance with many principles and criteria that somehow interact with each other and create a solid foundation, as a result of which the learning process proceeds more efficiently and эeffectively. After all, only high-quality preparation of tasks and lessons using an interactive whiteboard will allow students to become more actively involved in learning, activate their activities and make learning more visual, accessible and effective. The interactive whiteboard as a learning tool is multifunctional , since with the help of this complex you can not only reproduce the lesson material as a demonstration, but also make notes and instructions, work with video and audio files, and control the process of mastering the material using additional functionality. All these technical features allow you to reduce the teacher's time for preparing a lesson and diversify the educational material. The interactive complex used in the classroom allows you to design various methodological materials that must comply with the basic principles of teaching (visibility, accessibility, individuality, etc.). In the process of learning, an interactive whiteboard should first of all help you learn new material, in particular the conceptual apparatus that is so important in biology, so interactive tasks should be classified and have a different structure. [9]. At different stages of the lesson, it is necessary to use various techniques for composing interactive tasks that allow you to form a stable cognitive interest, and as a result, activate the cognitive activity of students. Interactive tasks are used not only at the beginning of learning a new material, but also as a way to get started. It is also important to apply an interdisciplinary approach to the study of phenomena and processes in the study of natural science disciplines

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